

Laws of Motion

Chapter 3: Laws of Motion · Topic 1

Key Concept

Newton's First Law states that an object remains at rest or in uniform motion unless acted upon by an external force (law of inertia).

Newton's Second Law states that force equals mass times acceleration ($F=ma$), showing how force affects an object's motion.

Newton's Third Law states that for every action, there is an equal and opposite reaction, explaining forces between interacting objects.

These laws explain everyday phenomena, like why we feel pushed back in an accelerating car, or how rockets propel themselves forward.

Quick Revision Notes

- First Law: objects stay at rest or in motion unless a force acts (inertia).
- Second Law: Force = mass $\times$ acceleration ($F=ma$).
- Third Law: every action has an equal, opposite reaction.
- These are Newton's three laws of motion.
- They form the foundation of classical mechanics.
- They explain everyday phenomena.
- Example: feeling pushed back in an accelerating car.
- Example: rockets propelling forward using reaction force.

Practice Questions

- 1 Discuss an example of Newton's First Law.
- 2 Calculate force using $F=ma$ for given values.
- 3 Discuss an example of Newton's Third Law.
- 4 Explain why rockets can move in space using Newton's Third Law.
- 5 Research how seatbelts relate to Newton's First Law.
- 6 Explain all three laws in your own words.